

09/845,231F0630/AMDP630USAMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions of claims in the application:

Listing of Claims:

1. (Currently amended) A system for controlling a thin film deposition process, comprising:
one or more thin film deposition components that deposit operative to deposit a thin film on one or more portions of a wafer;
a thin film deposition component driving system for driving the one or more deposition components;
a system for directing light on to the deposited thin film and collecting light reflected from the deposited thin film;
a scatterometry system adapted to detect that detects structural irregularities associated with the deposited thin film by comparing reflected light data associated with the deposited thin film with a database comprising known thin film reflected light signatures; and
a processor that communicates with the operatively coupled to the monitoring scatterometry system and the thin film deposition component driving system, wherein the processor partitions a mask into a plurality of grid blocks mapped to portions of the wafer and determines deposition parameter adjustments at the one or more grid blocks for to the one or more deposition components, the deposition parameter adjustments based at least in part upon data received from the scatterometry system.
2. (Currently Amended) The system of claim 1, the monitoring scatterometry system comprising a scatterometry system for processing captures the light reflected from the thin film.
3. (Currently Amended) The system of claim [[2]] 1, wherein the structural irregularities associated with the thin film include[[s]] at least one of pinholes, depressions, air bubbles, bumps, voids, agglomerates, large grains, second phase compositional variations and impurities, or a combination thereof.

09/845,231F0630/AMDP630US

4. (Currently Amended) The system of claim [[2]] 1, wherein the processor further determines the deposition parameter adjustments based in part on a the presence of an unacceptable thin film deposition condition at the one or more grid blocks for at least a portion of the wafer according to the data received from the monitoring scatterometry system.

5. (Currently Amended) The system of claim [[2]] 1, wherein the deposition parameter adjustments comprise at least one of thickness, uniformity, rate of deposition, pressure, flow rates of reacting species, flow rate of carrier gas and temperature or a combination thereof.

6-27. (Cancelled)

28. (Currently amended) A method for monitoring and controlling the deposition of a thin film, comprising:

depositing a thin film at a plurality of portions of a mask associated with on a wafer;
directing a light onto the thin film;

collecting a light reflected from the thin film;

employing scatterometry means to analyze the reflected light to determine one or more properties of the thin film;

monitoring structural irregularities associated with the deposited thin film by comparing reflected light data associated with the deposited thin film with a database comprising known thin film reflected light signatures;

controlling a deposition component to deposit thin film at the one or more portions of on the wafer by utilizing a non-linear training system which facilitates determining deposition parameter adjustments according to the properties of the thin film; and

using a processor to map the plurality of portions, to determine deposition conditions at the one or more portions, and to control the at least one deposition component based at least in part on data received from the scatterometry means.

29. (Currently Amended) The method of claim 28, wherein the properties include at least one of thickness, uniformity, presence of defects, and presence of impurities or a combination therof.

09/845,231F0630/AMDP630US

30-34. (Cancelled)

35. (Currently Amended) A method for regulating a process for depositing a thin film, comprising:

using one or more deposition components to deposit a thin film;

determining the characteristics of the deposited thin film at one or more grid blocks by utilizing reflected light and comparing to known thin film reflected light signatures; and

using a processor to map the one or more grid blocks of a mask of the thin film and to coordinate control of the one or more deposition components to deposit subsequent thin film at the one or more grid blocks and based at least in part on the characteristics of the deposited thin data gathered from comparing the reflected light to known thin film light signatures.

36. (Currently Amended) A system for regulating a process for depositing a thin film, comprising:

means for using one or more deposition components to deposit a thin film;

means for determining the acceptability of the thin film deposition at one or more grid blocks by utilizing reflected light and comparing to known thin film reflected light signatures; and

means for using a processor to map the one or more grid blocks of a mask of the thin film and to coordinate control of the one or more deposition components to deposit the thin film at the one or more grid blocks and to determine a processor based at least in part on the acceptability of the thin film deposition as determined by comparing the known thin film signatures to reflected light.

09/845,231

F0630/AMDP630US

37. (Currently Amended) A system that controls the deposition of a thin film on a wafer, comprising:

at least one deposition component employed to deposit a thin film at one or more grid blocks of a mask mapped to portions of the a wafer;

a coherent light source directed onto the thin film;

a receiving component that collects light reflected from the thin film;

a scatterometry system that analyzes the reflected light to determine one or more properties of the thin film at one or more grid blocks; and

a processor that partitions the mask into the one or more grid blocks and controls the at least one deposition component based at least in part on data received from the scatterometry system.